WHAT IS CLAIMED IS:

1. A hydrogen generator comprising:

a burner for generating a combustion gas;

a reformer provided around the burner to generate a reformed gas containing hydrogen by a steam reforming reaction from a feed material comprising a compound containing at least carbon and hydrogen and a steam, using heat transmission from a combustion gas generated by the burner; and

an evaporator having an inner tube provided around the burner, an outer tube provided around the inner tube, and a bottom plate that closes a lower portion of a tubular space formed between the inner tube and the outer tube, the evaporator being configured to evaporate water supplied to the tubular space to generate the steam to be supplied to the reformer, wherein

a water absorbing member having a water absorbing capability is provided in the tubular space.

2. The hydrogen generator according to Claim 1, wherein a first evaporation chamber having a downward flow passage through which the water supplied from above flows downwardly, and a second evaporation chamber provided on an inner side of the first evaporation chamber and having an upward flow passage through which the steam generated by evaporation of the water within the first evaporation chamber flows upwardly are provided in the tubular space, and

the water absorbing member is provided within the first evaporation chamber.

3. The hydrogen generator according to Claim 2, wherein the evaporator further has an intermediate tube disposed between the inner tube and the outer tube, the first

evaporation chamber is provided in a tubular space formed between the outer tube and the intermediate tube, and the second evaporation chamber is provided in a tubular space formed between the inner tube and the intermediate tube, and

the water absorbing member is provided on a face of the outer tube on the first evaporation chamber side.

4. The hydrogen generator according to Claim 1, wherein a first evaporation chamber having a downward flow passage through which the water supplied from above flows downwardly, and a second evaporation chamber provided on an inner side of the first evaporation chamber and having an upward flow passage through which the steam generated by evaporation of the water within the first evaporation chamber flows upwardly are provided in the tubular space, and

the water absorbing member is provided within the second evaporation chamber.

5. The hydrogen generator according to Claim 4, wherein the evaporator further has an intermediate tube disposed between the inner tube and the outer tube, the first evaporation chamber is provided in a tubular space formed between the outer tube and the intermediate tube, and the second evaporation chamber is provided in a tubular space formed between the inner tube and the intermediate tube, and

the water absorbing member is provided on a face of the inner tube on the second evaporation chamber side.

6. The hydrogen generator according to Claim 1, wherein a first evaporation chamber having a downward flow passage through which the water supplied from above flows

downwardly, and a second evaporation chamber provided on an inner side of the first evaporation chamber and having an upward flow passage through which the steam generated by evaporation of the water within the first evaporation chamber flows upwardly are provided in the tubular space, and

the water absorbing member is provided within the first evaporation chamber and the second evaporation chamber.

7. The hydrogen generator according to Claim 6, wherein the evaporator has an intermediate tube disposed between the inner tube and the outer tube, the first evaporation chamber is provided in a tubular space formed between the outer tube and the intermediate tube, and the second evaporation chamber is provided in a tubular space formed between the inner tube and the intermediate tube, and

the water absorbing member is provided on a face of the outer tube on the first evaporation chamber side and a face of the inner tube on the second evaporation chamber side.

8. The hydrogen generator according to Claim 1, wherein the water absorbing member is provided on an upper face of the bottom plate.

9. The hydrogen generator according to Claim 1, wherein the water absorbing member is made of one of a porous material, a mesh-shaped material, and a fabric-shaped material.

10. The hydrogen generator according to Claim 2, wherein the water absorbing member provided on a face of the outer tube on the first evaporation chamber side is

arranged in a spiral shape.

11. The hydrogen generator according to Claim 4, wherein the water absorbing member provided on a face of the inner tube on the second evaporation chamber side is made of a material having a plurality of holes, and a space having an average hole diameter of the water absorbing member or more is provided between the face of the inner tube on the second evaporation chamber side and the water absorbing member.

12. The hydrogen generator according to Claim 4, wherein heat conductivity of the water absorbing member provided on a face of the inner tube on the second evaporation chamber side is equal to or higher than heat conductivity of the inner tube.

13. The hydrogen generator according to Claim 3, wherein the water absorbing member is formed by performing non-leveling process on the face of the outer tube on the first evaporation chamber side.

14. The hydrogen generator according to Claim 5, wherein the water absorbing member is formed by performing non-leveling process on the face of the inner tube on the second evaporation chamber side.

15. The hydrogen generator according to Claim 7, wherein the water absorbing member is formed by performing non-leveling process on the face of the outer tube on the first evaporation chamber side and on the face of the inner tube on the second evaporation chamber side.

16. The hydrogen generator according to Claim 13 or 14, wherein a spacing between concave and convex portions formed by the non-leveling process is not less than 0.05mm and not more than 1mm.

17. The hydrogen generator according to Claim 13 or 14, wherein the non-leveling process is performed by one of etching process, laser processing, and blasting process.

18. A fuel cell system comprising:

a hydrogen generator including:

a burner for generating a combustion gas;

a reformer provided around the burner to generate a reformed gas containing hydrogen by a steam reforming reaction based on a feed material comprising a compound containing at least carbon and hydrogen and a steam, using heat transmission from a combustion gas generated by the burner; and

an evaporator having an inner tube provided around the burner, an outer tube provided around the inner tube, and a bottom plate that closes a lower portion of a tubular space formed between the inner tube and the outer tube, the evaporator being configured to evaporate water supplied to the tubular space to generate the steam to be supplied to the reformer, wherein

a water absorbing member having a water absorbing capability is provided in the tubular space; and

a fuel cell configured to generate a power using an oxidization gas containing oxygen and the reformed gas supplied from the hydrogen generator.